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Collective Dreaming in the Virtual World:

The First Step

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Abstract

The framework for this exploratory case study is a concept called “collective dreaming”, which is a participatory space where everyday people can convene to imagine and build the worlds that they would like to live in. Collective dreaming is an aspirational concept that does not yet exist.

In this paper we describe an early prototype for a collective dreaming space, a digitally networked research tool called Collective Dream. This prototype acts as a virtual platform for generative co-design sessions. It provides the means for people to first imagine an ideal experience individually, and then collectively envision and make a shared ideal experience. The intent of presenting the Collective Dream Prototype is to provoke a conversation about the future of participatory design.

Research Objectives

There are four (4) main objectives of this research: (1) to *explore* and *experiment* on co-creation through a concept called Collective Dreaming, (2) to provide a *glimpse* of the form and method that participatory design could be taking in the future, (3) to demonstrate the *potential* of virtual collaborative space for creative expression in a co-design process, and (4) to reflect on participants’ individual and group behaviors in the virtual environment. In order to capture all the objectives aforementioned, we asked graduate students to go through co-design sessions using a digital platform as our case study, specifically: *to create individual and collective representations of their ideal learning experiences*. Thus, a working prototype needed to be in place for people to play around with. This paper describes the design, prototyping, and testing of a digital system (using Unity3D game engine) to allow a networked co-creation of ideal experiences.

The System of Collective Dreaming and Its Underlying Assumptions

We begin by looking at the most fundamental aspect of a system. At its most basic, a system could be defined as “an interconnected set of elements that is coherently organized in a way that achieves something” (Meadows, 2009, pg. 11). Accordingly, a system should (at least) consist of Elements (or components), Interconnections, and a Function of a Purpose. The *components* are the basic building blocks that make up the system. The *interconnections* are the relationships between those components. The kind of relationship those components have is dependent on the *purpose* of the system, and vice versa, what *purpose* the system might have, is also dependent on the kind of relationships those components have.

Since Collective Dreaming in a virtual world uses a digital platform where people participate in a co-design process (i.e., participatory design), the *components* consist of human agents (the participants) and the materials that the human agents use (a set of words and icons). The

interconnections are the interactions, communications, and negotiations among human agents using the materials available in order to achieve a *purpose* — to collectively dream and express ideal experiences.

Precedents

Participatory design (PD) has traditionally been practiced in face-to-face situations (Simonsen and Robertson, 2013). We have learned a lot about the physical places, spaces, tools and materials needed to facilitate people's creativity in such situations and have developed many paper-based generative tools for inviting non-designers to participate in the front end of the design process. Examples of **paper-based collective making** being used by practitioners around the world can be found in Sanders and Stappers' *Convivial Toolbox* (2012).

However, in the future we will need to look beyond place-based, face-to-face situations for practicing PD in order to deal with challenges of greater scope and scale. We need to be able to invite people from around the world to join in collectively creative activities. To do so we must consider virtual spaces, places, tools and materials for fostering creativity across space and time. Digitally networked worlds provide a new landscape for this type of exploration that we will refer to as **virtual collective dreaming**.

Collective dreaming is a participatory space where people convene to imagine and build worlds that they would like to live in. Sanders and Stappers (2014) introduced the concept of collective dreaming in a short ACM paper called *Three Slices in Time: From Designing to Co-designing to Collective Dreaming*. They proposed that designers are moving from being designers of stuff, to being facilitators of the imagination of others and then on to being the makers of toolkits for collective dreaming. They describe the progression of the design disciplines from designing *for* people to designing *with* people and speculate the eventual shift in the future to designing *by* people, a state they have named "collective dreaming." Collective dreaming provides a glimpse of where PD could be heading in the future. This short paper describes a case study about building a prototype to support collective dreaming and then observing and reflecting upon what happens when people use it for the first time. We are beginning to see evidence of online spaces, places, tools and materials that support some aspects of collectively creative thinking and making.

In recent years, "crowdsourcing" has been used to support collaborative work over virtual networks. The classic example is OpenIDEO, in which a multitude of people from different backgrounds and skills are invited to solve complex problems together. In order to manage such large numbers of participants, a voting system is used for collective decision-making and written communication is used for the discussion and exchanges of ideas. OpenIDEO has had successes in providing a platform for self-sustained sharing and open collaboration through a virtual network (Fuge, Tee, Agonino, & Maton, 2014). But such crowdsourcing does not support truly collaborative making.

Mural.ly (mural.ly.com) is a platform for virtual collaboration whose aim is to "Make Remote Design Work." It is used for "online brainstorming, synthesis and collaboration" and lets people post and move sticky notes and other documents. But moving sticky notes around does not fully support collective creativity.

Slack (slack.com) supports "real-time messaging, archiving and search for modern teams. Not just your messages, but all your files, images, PDFs, documents, and spreadsheets can be dropped right

into Slack and shared with anyone you want.” Thus, Slack appears to be more about sharing than co-creating.

Game design and development is relevant to this discussion as well. We now have VR systems for consumer use that let us play games in virtual worlds. And we have games where people build their own systems. The prototype development in the case study that we report on here was influenced by multiplayer, online games that support collaboration, such as Journey (www.thatgamecompany.com/games/journey/), Eufloria (www.eufloria-game.com/), and creative expression, such as Minecraft (www.minecraft.net/).

We now have the means to embody immersive environments in real, virtual and hybrid spaces. It is only a matter of time before we can invite everyday people into the collective creation of future scenarios and environments. What this study explores is an open, virtual platform that allows multiple participants to actively co-create and share ideas in real-time through the use of digital collaging to create expressions of an ideal learning experience. This study does not intend to evaluate the human-computer interactions of the prototype. Instead it intends to be a demonstration of a virtual collaborative space for creative expression in the PD process.

Making the Prototype

The intent of making the Collective Dream Prototype was first to learn how to build it and then to see what would happen when people used it for the first time. For example, could they use it? Would they be able to express creative ideas? Would they choose to work individually or collectively or both?

An iterative approach was taken to develop and user test a series of tool prototypes moving from paper, to digital prototypes, to the networked digital Collective Dream Prototype. This approach is shown in Figure 1. The iterations were driven by observations and participant feedback from user testing. Insight and understanding were fed back into the process as each iteration was completed. Initial experimentation used “paper-based” generative design toolkits, and was followed by a single player “digital touchscreen” prototype that was developed using game development software called Unity. Paper based toolkits and digital touchscreen prototypes were tested in Phase 1. The Collective Dream Prototype was tested in Phase 2.

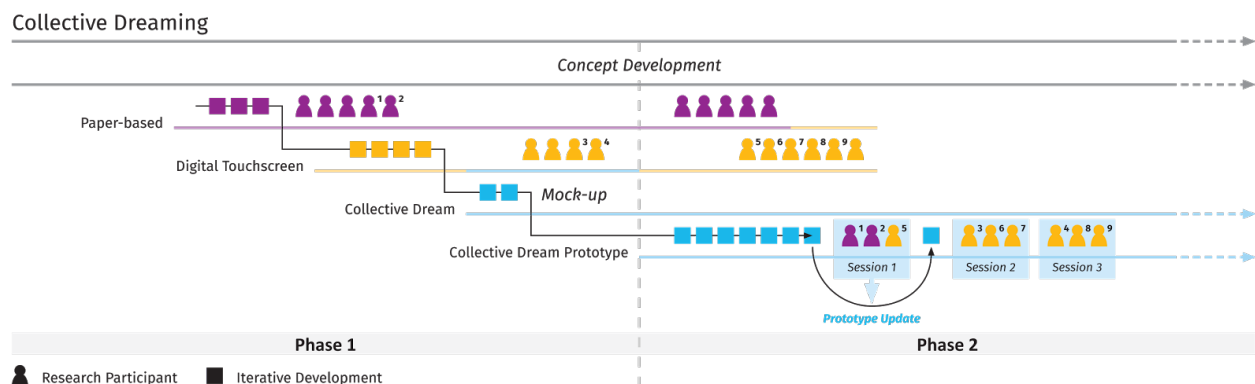


Figure 1. This diagram shows the four stages of our iterative process, moving from paper-based prototyping through to the Collective Dream Prototype.

As we designed the concept prototype and developed the co-design session, we made a few assumptions: (A1) Local interactions are important in co-creation for communication and sharing experiences. (A2) Participants will be most innovative when they create together in a shared space after creating in a personal space. (A3) Different incomplete sets of icons would encourage players to explore and make connections with other players, enabling access to a wider variety of icons. (A4) Digital toolkits (made up of icons & words) derived from analog toolkits will enhance some aspects of the participants' experiences and expand semantic expressions.

Using the Prototype

In Phase 2, nine participants, graduate students from different disciplines, were invited to create and share their ideal learning experiences in groups of three. They all had taken part in a previous research study where they made paper-based or digital visualizations of their current learning experience. Three sessions were conducted using the Collective Dream Prototype. In each session, two participants interacted with the prototype through separate 60" touchscreen devices while one participant used a personal computer (with mouse and keyboard). The participants were physically in the same location, but were separated and only directly communicated with each other through the application's chat feature to simulate a remote user experience.

The session started with the facilitators going over the general usability of the application's user interface, such as how to: add words and shapes into their personal worlds; scale, rotate and delete shapes; communicate with other participants using the chat function; collect shapes missing from their inventories from other participants; create a shared world with another participant so both participants could co-create; and view other participants' past learning experience collages.

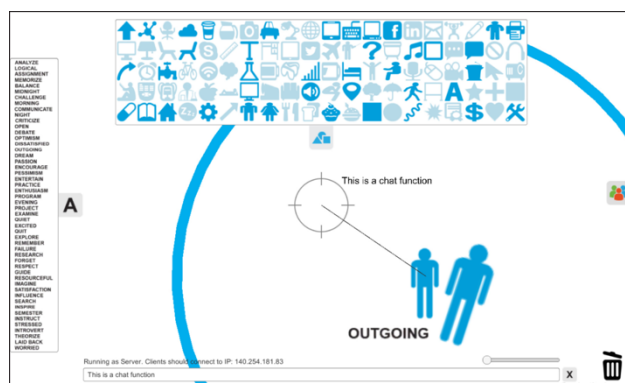


Figure 2. Screenshot of the user interface of the CD prototype. The participants had direct access to only a third of the shapes in the shape inventory.

As each participant entered the virtual space, they were assigned a personal world marked by a large circle with a particular color — orange, blue, or green (Figure 3). The participant's shapes were color-coded to match their home world. While all participants had access to a complete word list, each participant only had access to a third of the one hundred shapes in their inventory. In order to 'collect' the other shapes, the participants needed to explore other participants' worlds, chat with them about sharing shapes and add missing shapes to their inventory. Participants were also able to create a shared world by extending an invitation to other participants. If the other

participants accepted the invite, a shared world was created. In the shared world, the participants had equal control over what was created, unlike their personal worlds that gave full control of content to the owner only. After the session had concluded, the participants presented what they created in their personal and shared worlds. This was followed by an open discussion amongst the participants and facilitators as to what they thought of the prototype and participant interactions. A survey on the overall experience followed.

In the first session, the participants encountered an unexpected glitch in the prototype. We took the feedback and observations from this session and improved the prototype's usability. The slight system changes improved the prototype. The user experience was better and the output from the participants became more creative.

Participants were now able to 'overlap' shapes, which enabled them to combine shapes in new ways that dramatically expanded the meaning given to the shapes. Participants were now also able to zoom in and out. This feature was frequently used to see the locations of their collective world and to quickly explore the entire virtual space. In all three sessions, after the participants had completed the activity, each member presented their final personal creation. The group then collectively presented their shared outcome. The following are examples of the different types of narrative presented by the participants in session three:

"I responded to the symbols that were available to me and the first thing that pops in is sleeping" was how Participant A (Figure 4) started his explanation and it was reflected in the process he went through to create his ideal experience. Having decompression time from learning, like a break, sleep, or dream *"leading to new dreams"*, was an important aspect in his ideal world. While he considered himself an introvert, he enjoyed connecting with other people and being part of a larger reciprocal community of conversation and sharing.

Participant B described her learning process as being very lonely. *"I'm the only one. All [the people] are me. So in my learning process, it's very lonely. This is my home and I can learn everything without going out."* At home, she could search for tutorials and virtual guides. During this experience she would construct her own understanding. Food as a source of energy was a very important factor in her ability to learn successfully. Little by little she would move away from the structured guidance of the tutorials and *"actually do it."* She saw learning alone as the best way for her to learn.

Participant C first mentioned gender equality and equality between students and teachers. However, she placed emphasis on communications and interactions amongst people and the environment surrounding the conversations. Imagination, exploration, and dreaming. She ended the presentation with the importance of a global perspective in which, *"everybody will challenge each other and know about the global issues."*



Figure 3. Participants interacting with touchscreen devices and a personal computer (upper right).

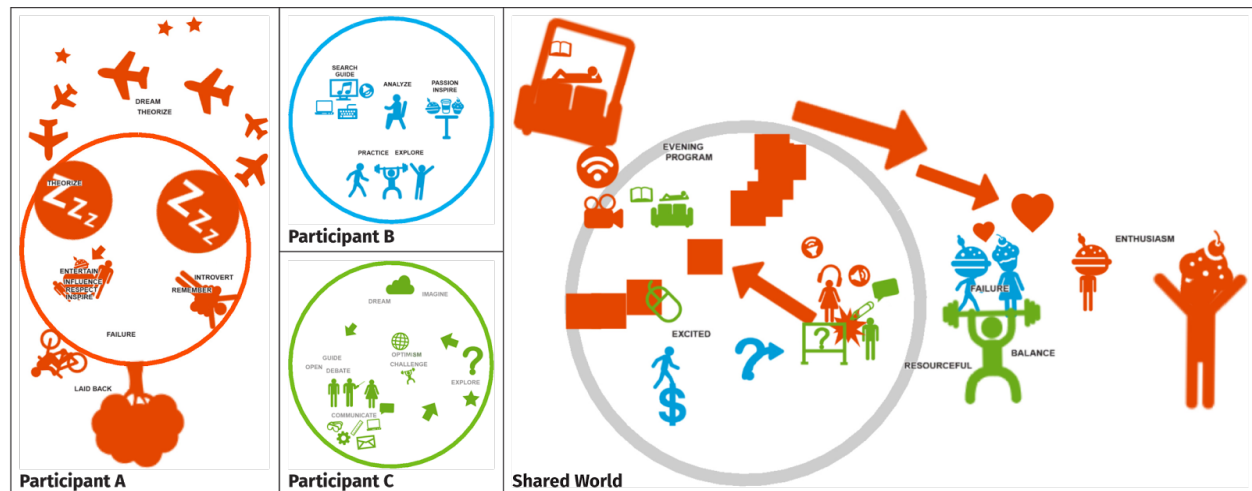


Figure 4. This shows the final output from session three, both individual participant responses (left) and their collectively created, ideal learning experience (right).

There is evidence of participants across all three sessions taking shapes and ideas that were present in their personal world and bringing them into the shared world. The participants from session three all brought different elements from their personal worlds into the shared world. Participant A did not bring the same shapes from his personal world, but re-interpreted shapes and applied the same importance to personal space during the learning process (top left in the Shared World). Participant B directly introduced food shapes into the shared world signifying food as energy and enjoyment (far right). Participant C transferred her themes of gender and hierarchical equality into the shared world (center).

Each participant had a slightly different interpretation of the final outcome. However, this never caused disagreement and this summary pulls together their perspectives. In the Shared World (Figure 4), if there is conflict in the learning process, there is a barricaded, personal space to retreat into. There is a struggle to find balance while going through a cycle of exploring and failing. Personal space and food help to refuel or re-energize the learning process and are very important. The communication between students and instructors is a complex relationship and always has barriers.

Reflections on the Process

From the three co-design sessions, some patterns emerged and the overall case study demonstrated and touched on all the assumptions we made early on. All nine participants chose to partake in the co-creation of an “ideal learning experience” in the shared world. The participants first worked on their own “ideal learning experience” before creating a shared world. In all sessions, one participant would be the first to ‘make contact’ with the others. This was often just to collect (or ‘steal’) shapes and return back to their home worlds to continue building. An incomplete inventory of shapes encouraged all participants to explore and engage with the others. The open system and materials supported the participants’ ability to create new and unique meanings using the inventory of shapes and words.

All the participants utilized the chat function in some way, usually later in the session to make commentaries, to ask other participants for shapes, and most notably, to invite other participants to create a shared space. There were often explicit negotiations between participants to discuss “when” and “where” they should create a shared world. However, while the shared worlds were being created, almost no chatting or explicit negotiation took place! The participants selected, moved and transformed the shapes quickly, quietly and playfully.

Unexpected ‘player etiquette’ emerged as well. Participants did not delete shapes brought by other participants into the shared world. Instead, these shapes were re-interpreted and incorporated into the collective dream. This etiquette was not outlined by the facilitator but was implicitly “agreed” by the participants. ‘Shape signaling’ was also an unexpected trait. Participants used the shapes to communicate with other participants by signaling to them or attempting to guide them. In one instance, a participant created a “trail of hearts” (see Figure 3, bottom right photo) to encourage the others to follow her to create a shared world.

Interaction between the participants was also very playful in all three sessions. This was especially true when generating ideas in the shared world and was indicated by participants’ spontaneous giggleness. The participant-completed surveys and discussions that took place after the sessions supported this observation. *“The group activity was exciting and fun”, “I enjoyed the ‘playfulness’ of this experience”, “An open, free, sandbox kind of experience, where you’re just allowed to do whatever you want to outside. I mean you have this explicit goal about ideal learning experiences, but then when we got to move into our shared space it was just playful.”*

The participants’ actions also varied from being intentional (slow thinking) to sometimes improvisational (fast thinking) in their personal worlds. However, in the shared worlds all the participants were highly improvisational and spontaneous. Kahneman (2013) has pointed out that while slow thinking “can construct thoughts in an orderly series of steps,” fast thinking has the advantage to “generate surprisingly complex patterns of ideas.” In contrast to OpenIDEO where most of their iterative processes “proceeded through a sequence of steps,” the Collective Dream

Prototype utilized the advantage of both systems of thinking. One participant explained that “*It’s just much more fun, ... in real time [to] be communicating with people, instead of an artifact that people could look at, but this is, we’re here right now doing this thing.*”

Next Steps

The Collective Dream Prototype was able to support remote co-creation in real-time. It provoked interplay between individual and collective thought and between intentional and improvisational action. The next step is to build a web-based platform, where we can increase the number of participants across different time zones and geography. As creative and co-creative processes transcend the locality of place and time, virtual collective dreaming will help not only to improve and enrich the PD process, but it will also push the boundaries of PD to further possibilities. This prototype is an embodiment of sociotechnical tool that we desperately need to adapt to the changing complexity of wicked problems by expanding people’s ingenuity in PD.

Collective dreaming aims to provoke conversations about the future. It shows how the new design languages for co-creation can extend across time and space so that we can invite everyday people to take part in the imagination and anticipation of future scenarios. The Collective Dream Prototype is an approach still in its infancy as a tool for virtual networked participatory design, yet it shows interesting promise for convivial co-creation in real time.

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